

REMARKS

Claims 1-52 are pending in the application and have been examined. Claims 1-52 stand rejected. Claims 1, 3, 33-40, and 46 have been amended. Claims 53 and 54 have been added. Reconsideration of Claims 1-52, and allowance of Claims 1-54 in view of the above amendments and following remarks is respectfully requested.

Response to Drawings Requirement

The Examiner has object to the drawings under 37 C.F.R. 1.83(a) as failing to show every feature of the invention specified in the claims. More specifically, the Examiner states that the drawings fail to show (1) the acquisition layer having an area being less than and the same as the area of the storage layer, (2) one band of absorbent material forming liquid distribution zones, (3) leg gathers, and (4) both the acquisition layer and storage layer being made of the same composite material.

Regarding "one band of absorbent material forming liquid distribution zones", the independent claims, Claims 1, 33-40, and 46, have been amended to recite that the composite includes two or more bands of absorbent material. Applicants submit that the drawings show the features as now claimed.

Regarding the other objections, applicants have amended the application to include FIGURES 31A, 31B, 32, and 33. FIGURE 31A shows an absorbent construct having an acquisition layer having an area that is the same as adjacent storage layer (Claim 48), and FIGURE 31B shows an absorbent construct having an acquisition layer having an area that is less than an adjacent storage layer (Claim 47). Support for these figures can be found at page 37, lines 27-34 of the specification as originally filed. FIGURE 33 shows a representative absorbent article that includes a liquid pervious face sheet, acquisition layer, fluted composite, liquid impervious back sheet, and leg gathers (Claim 45). Support for the figure can be found in

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FIGURE 27; at page 38, line 33 through page 39, line 3; and Claim 45 as originally filed. FIGURE 32 shows a representative absorbent article that includes a liquid pervious face sheet, fluted composite, storage layer, liquid impervious back sheet, and leg gathers (Claim 52). Support for the figure can be found in FIGURES 25A and 25B; at page 38, line 33 through page 39, line 3; and Claim 52 as originally filed.

Regarding "both the acquisition layer and storage layer being made of the same composite material", applicants submit that such a feature is not claimed.

The Examiner has also objected to the drawings because certain reference numerals were used to depict more than one feature. Applicants have amended FIGURES 12A, 12B, 13, 15, and 16, and the corresponding descriptions in the specification to correct this inadvertent mistake.

A new set of formal drawings is enclosed herewith.

In view of the amendments noted above, applicants submit that the objections to the drawings have been overcome.

The Rejection of Claims 2 and 3 under 35 U.S.C. § 112, Second Paragraph

The Examiner states that Claims 2 and 3 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In order to clarify the claimed subject matter of the invention, Claim 1 has been amended to replace the phrase "wherein the absorbent material is present in the fibrous matrix in one or more bands, wherein the bands define liquid distribution zones in the fibrous matrix" with the phrase "wherein the absorbent material is present in the fibrous matrix in two or more bands, wherein the regions between the bands comprise liquid distribution zones in the fibrous matrix." The amended language of Claim 1 further serves to clarify Claim 2 where the "liquid distribution zones," which correspond to the regions between

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the bands, are "substantially free of absorbent material." Claim 3 has been amended to correct certain formalities with respect to antecedent basis. Applicant respectfully request withdrawal of these grounds for rejection.

The Rejection of Claims 1, 3, 6-22, 28, 30-32, 35 and 38-52 under 35 U.S.C. § 102(b)

Claims 1, 3, 6-22, 28, 30-32, 35, and 38-52 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,486,167, issued to Dragoo et al.

Claims 1, 35, 38-40, and 46 have been amended to clarify that the composite of the present invention includes two or more bands of absorbent material, wherein the regions between the bands comprise liquid distribution zones. Support for the amendment can be found throughout the application as filed, for example, at page 17, lines 13-17.

As amended, the claimed invention relates to an absorbent composite containing a fibrous matrix including bonded cellulosic fibers and two or more bands of absorbent material. The region between the bands of absorbent material is a liquid distribution zone (see independent Claims 1, 33-40, and 46). In some embodiments the absorbent composite is wetlaid (see independent Claims 33, 36), and in some embodiments the absorbent composite is foam-formed (see independent Claims 34, 37). By virtue of these "wet" forming methods, the composite's fibrous matrix includes bonded cellulosic fibers. As defined in the specification, the term "bonded" refers to hydrogen bonding that occurs between fibers when fibers have been wetted and then formed into a mat or web. See page 7, lines, 14-27.

The Dragoo reference generally discloses an absorbent article having a topsheet, a backsheet, and a multi-layer absorbent structure intermediate the topsheet and backsheet. See column 3, lines 31-34. The multi-layer absorbent structure includes an acquisition layer, a storage layer (also referred to as absorbent or storage core, reference numeral 32), and an optional intermediate integrity layer. See column 3, lines 34-36. The storage core includes a

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blend of cellulosic fibers. See column 12, lines 12-28. The storage core also preferably includes absorbent gelling material. See column 14, lines 7-8. In a preferred embodiment, the storage core includes an airlaid blend of airfelt, PET fibers, and absorbent gelling material. See column 14, lines 27-37. The reference describes alternative storage cores, such as an air-laid blend of polyester fibers and crosslinked fibers. See column 16, lines 55-63.

The storage core of the multi-layer absorbent structure described by the Dragoo reference is an airlaid web. In contrast, the claimed composite is formed by either a wetlaid or foam-forming method. As noted in the application, the distinction between airlaid webs and either wetlaid or foam-formed webs is that in wetlaid or foam-formed webs the fibers are bonded. Because the storage core described by the reference is airlaid, the core's cellulosic fibers are not bonded. Accordingly, the storage core described by the Dragoo reference does not include bonded cellulosic fibers, as in the claimed invention.

Furthermore, the storage core of the multi-layer absorbent structure described by the Dragoo reference does not include absorbent material present in a fibrous matrix in two or more bands, as in the invention as now claimed. The Examiner states that the reference discloses a storage core with absorbent gelling material within the fibers that are placed in strips and refers to column 15, lines 62-64 of the reference.

Applicants agree that the reference describes that, in some embodiments of the storage core, the particulate absorbent gelling material can be in the form of aggregates, or macrostructures. As described in the reference, the macrostructures are prepared by crosslinking and compacting the gelling material into a coherent mass. See column 16, lines 1-2. At column 16, lines 14-21, the reference states that if the macrostructure is a sheet or strip,

the sheet or strip will typically simply be used as another layer in the multiple layer absorbent structure. For example, such a layer may be placed between the acquisition layer 30 and the storage core 32 (or between any other layers of the multiple layer absorbent structure). The sheet or strip of absorbing gelling

material may optionally have a liquid stable layer 34 on one side or preferably on both sides.

To summarize, the reference describes a multi-layered absorbent structure having an acquisition layer and storage core. The storage core includes a blend of fibers and, optionally, absorbent gelling material. If the absorbent gelling material is in the form of a sheet or strip, the sheet or strip is simply added as another layer to the multi-layer absorbent structure. The storage core described by the reference does not include two or more bands of absorbent material in a fibrous matrix, as in the claimed invention.

Anticipation requires that each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. MPEP § 2131. The Dragoo reference fails to anticipate the claimed invention because the reference fails to describe an absorbent composite with absorbent material in two or more bands wherein the regions between the bands comprise liquid distribution zones. Furthermore, the reference does not describe a storage core that includes bonded cellulosic fibers. Because the cited reference fails to exactly describe the claimed invention, the reference is not anticipatory, and withdrawal of this grounds for rejection is respectfully requested.

The Rejection of Claims 4, 5, 27, and 29 under 35 U.S.C. § 103(a)

Claims 4, 5, 27, and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Dragoo reference. Claims 4, 5, 27, and 29 depend from Claim 1, which has been amended. In view of the amendments to Claims 1 and the foregoing remarks, applicants submit that the cited reference fails to teach, remotely suggest, provide any motivation to make, or otherwise render obvious the invention as now claimed. Withdrawal of this grounds for rejection is respectfully requested.

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The Rejection of Claims 23-26, 33, 34, and 37 under 35 U.S.C. § 103(a)

Claims 23-26, 33, 34, and 37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Dragoo reference in view of U.S. Patent No. 5,217,445, issued to Young et al. Claims 23-26 depend from Claim 1, or claims that depend from Claim 1. Claims 1, 33, 34, and 37 have been amended. The deficiencies of the teachings of the Dragoo reference noted above are not cured by the teachings of the Young reference. In view of the amendments to Claims 1, 33, 34, and 37 and the foregoing remarks, applicants submit that the cited references, either alone or in combination, fail to teach, remotely suggest, provide any motivation to make, or otherwise render obvious the invention as now claimed. Withdrawal of this grounds for rejection is respectfully requested.

New Claims

Claims 53 and 54 have been added. Claim 53 and 54 find support throughout the application as originally filed and contain no new matter. The term "fluted structure" is defined in the specification at page 3, lines 12-16, and at page 7, lines 5-8.

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Conclusion

Applicants believe that Claims 1-54 are in condition for allowance. If any issues remain that may be expeditiously addressed in a telephone interview, the Examiner is encouraged to telephone applicants' attorney at 206.695.1755.

Respectfully submitted,

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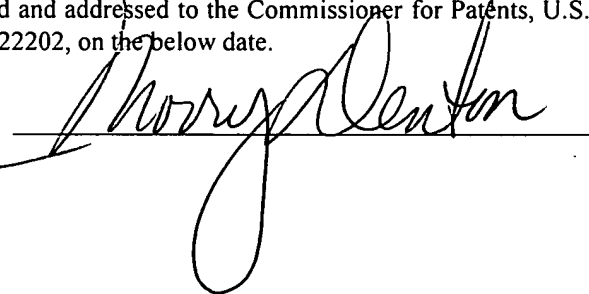


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VERSION WITH MARKINGS TO SHOW CHANGES MADE JULY 12, 2002

In the Specification:

The paragraph beginning on page 30, line 31, has been amended to read as follows:

Referring to FIGURE 12A, machine [100]1000 includes foraminous support [102]1020 (i.e., a forming wire); vacuum heads [104]1040 for dewatering fibrous slurry [124]1240 to provide wet composite [120]1200; headbox [106]1060 for depositing the fibrous slurry onto support [102]1020; nozzle manifold 108 for injecting absorbent material [122]1220, preferably as an aqueous suspension, into partially dewatered web [126]1260; fibrous slurry supply [112]1120; absorbent material supply [114]1140; pumps [110]1100 for delivering the fibrous slurry and absorbent material from their respective supplies to headbox [106]1060 and manifold 108, respectively; and drying means [116]1160. Briefly, fibrous slurry [124]1240 is deposited from headbox [106]1060 onto support [102]1020 and dewatered to provide partially dewatered web [126]1260. Absorbent material [122]1220, preferably as an aqueous suspension, is injected through nozzle manifold 108 into partially dewatered web [126]1260, preferably prior to extensive dewatering at vacuum heads [104]1040. As described above, manifold 108 includes a plurality of nozzles positioned across the width of support [102]1020 (i.e., the cross-machine direction) to deliver and inject absorbent material in bands across the composite's width. Wet composite [120]1200 is further dewatered along support [102]1020 and then dried by drying means [116]1160 (e.g., heated cans, drying oven, through-air dryer). A top plan view of the injection of absorbent material into the fibrous slurry is illustrated in FIGURE 12B.

The paragraph beginning on page 31, line 14, has been amended to read as follows:

The absorbent composite of the invention can be formed by devices and processes that include a twin-wire configuration (i.e., twin-forming wires). A representative twin-wire machine for forming composites of the invention is shown in FIGURE 13. Referring to FIGURE 13,

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machine 200 includes twin-forming wires 202 and 204 into which the composite's components are deposited. Basically, fibrous slurry [124]1240 is introduced into headbox 212 and deposited onto forming wires 202 and 204 at the headbox exit. Vacuum elements 206 and 208 dewater the fibrous slurries deposited on wires 202 and 204, respectively, to provide partially dewatered webs that exit the twin-wire portion of the machine as partially dewatered web [126]1260. Web [126]1260 continues to travel along wire 202 and continues to be dewatered by additional vacuum elements 210 to provide wet composite [120]1200 which is then dried by drying means 216 to provide composite 10.

The paragraph beginning on page 31, line 26, has been amended to read as follows:

Absorbent material can be introduced into the fibrous web at any one of several positions in the twin-wire process depending on the desired product configuration. For example, absorbent material can be introduced after the partially dewatered fibrous web has exited the twin-wire portion of the machine and has traveled along wire 202. Referring to FIGURE 13, absorbent material [122]1220 can be injected onto partially dewatered fibrous web [126]1260 at position 1. Alternatively, absorbent material can be introduced into the partially dewatered fibrous web prior to the web exiting the twin-wire portion of the machine (i.e., in the headbox). Referring to FIGURE 13, absorbent material [122]1220 can be injected into the partially dewatered web at positions 2, 3, or 4, or other positions along wires 202 and 204 where the web has been at least partially dewatered. Absorbent material can be introduced into the partially dewatered web formed and traveling along wire 202 and/or 204. As noted above, to form the composite of the invention having bands of absorbent material extending in the composite's machine direction, absorbent material is injected into the partially dewatered fibrous webs by nozzles spaced laterally across the width of the web. The nozzles are connected to an absorbent material supply. The nozzles can be positioned in various positions (e.g., positions 1, 2, or 3 in

FIGURE 13) as described above. For example, referring to FIGURE 13, nozzles can be located at positions 2 to inject absorbent material into partially dewatered webs on wires 202 and 204. Generally, the extent of mixing of fibers with absorbent material decreases as the fibrous web is dewatered (e.g., less mixing at position 1 than at position 2, and less mixing at position 2 than at position 3).

The paragraph beginning on page 33, line 28, has been amended to read as follows:

Referring to FIGURES 13 and 14A, composite 10 having strata 11 can be formed by machine 200. For composites in which strata 11 comprise the same components, a single fiber furnish [124]1240 is introduced into headbox 212. For forming composites having strata 11 comprising different components, headbox 212 includes one or more baffles 214 for the introduction of fiber furnishes (e.g., [124a]1240a, [124b]1240b, and [124c]1240c) having different compositions. In such a method, the upper and lower strata can be formed to include different components and have different basis weights and properties.

The paragraph beginning on page 38, line 33, has been amended to read as follows:

Constructs 90, 92, 94, 96, 100, 102, 104, and 106 can be incorporated into absorbent articles. Generally, absorbent articles 110, 112, 114, 116, 120, 122, 124, and 126, shown in FIGURES 25A through 25H, respectively, include a liquid pervious facing sheet 52 and a liquid impervious backing sheet 54 and constructs 90, 92, 94, 96, 100, 102, 104, and 106, respectively. In such absorbent articles, the facing sheet is joined to the backing sheet. The absorbent articles can further include leg gathers (53).

In the Claims:

Claims 1, 3, 33-40, and 46 have been amended as follows:

1. (Amended) An absorbent composite comprising a fibrous matrix and absorbent material, wherein the absorbent material is present in the fibrous matrix in [one] two or more bands, wherein the regions between the bands [define] comprise liquid distribution zones in the fibrous matrix, and wherein the fibrous matrix comprises bonded cellulosic fibers.

3. (Amended) The composite of Claim 1 wherein the composite contains a width and a length and wherein the bands are continuous along the composite's length in the machine direction.

33. (Amended) A wetlaid absorbent composite comprising a fibrous matrix and absorbent material, wherein the absorbent material is present in the fibrous matrix in [one] two or more bands, wherein the regions between the bands [define] comprise liquid distribution zones in the fibrous matrix, and wherein the fibrous matrix comprises bonded cellulosic fibers.

34. (Amended) A foam-formed absorbent composite comprising a fibrous matrix and absorbent material, wherein the absorbent material is present in the fibrous matrix in [one] two or more bands, wherein the regions between the bands [define] comprise liquid distribution zones in the fibrous matrix, and wherein the fibrous matrix comprises bonded cellulosic fibers.

35. (Amended) An absorbent article comprising an absorbent composite comprising a fibrous matrix and absorbent material, wherein the absorbent material is present in the fibrous matrix in two or more bands, wherein the regions between the bands [define] comprise liquid distribution zones in the fibrous matrix, and wherein the fibrous matrix comprises bonded cellulosic fibers.

36. (Amended) An absorbent article comprising a wetlaid absorbent composite comprising a fibrous matrix and absorbent material, wherein the absorbent material is present in

the fibrous matrix in two or more bands, wherein the regions between the bands [define] comprise liquid distribution zones in the fibrous matrix, and wherein the fibrous matrix comprises bonded cellulosic fibers.

37. (Amended) An absorbent article comprising a foam-formed absorbent composite comprising a fibrous matrix and absorbent material, wherein the absorbent material is present in the fibrous matrix in two or more bands, wherein the regions between the bands [define] comprise liquid distribution zones in the fibrous matrix, and wherein the fibrous matrix comprises bonded cellulosic fibers.

38. (Amended) An absorbent article comprising:

a liquid pervious facing sheet;

a storage layer comprising an absorbent composite comprising a fibrous matrix and absorbent material, wherein the absorbent material is present in the fibrous matrix in two or more bands, wherein the regions between the bands [define] comprise liquid distribution zones in the fibrous matrix, and wherein the fibrous matrix comprises bonded cellulosic fibers; and

a liquid impervious backing sheet.

39. (Amended) An absorbent article comprising:

a liquid pervious facing sheet;

an acquisition layer for rapidly acquiring and distributing liquid;

a storage layer comprising an absorbent composite comprising a fibrous matrix and absorbent material, wherein the absorbent material is present in the fibrous matrix in two or more bands, wherein the regions between the bands [define] comprise liquid distribution zones in the fibrous matrix, and wherein the fibrous matrix comprises bonded cellulosic fibers; and

a liquid impervious backing sheet.

40. (Amended) An absorbent article comprising:
a liquid pervious facing sheet;
an acquisition layer for rapidly acquiring and distributing liquid;
a storage layer comprising an absorbent composite comprising a fibrous matrix and absorbent material, wherein the absorbent material is present in the fibrous matrix in two or more bands, wherein the regions between the bands [define] comprise liquid distribution zones in the fibrous matrix, and wherein the fibrous matrix comprises bonded cellulosic fibers;
an intermediate layer interposed between the acquisition layer and the storage layer; and
a liquid impervious backing sheet.

46. (Amended) An absorbent article comprising:
a liquid pervious facing sheet;
an acquisition layer for acquiring and distributing liquid;
a storage layer; and
a liquid impervious backing sheet;
wherein the acquisition layer comprises an absorbent composite comprising a fibrous matrix and absorbent material, wherein the absorbent material is present in the fibrous matrix in two or more bands, wherein the regions between the bands [define] comprise liquid distribution zones in the fibrous matrix, and wherein the fibrous matrix comprises bonded cellulosic fibers.

Claims 53 and 54 have been added.

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